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EPIDEMIC INFLUENZA IN FOREIGN COUNTRIES.

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To construct a full picture of the recent influenza epidemic, showing its relative chronology and severity in different parts of the world, will require the most painstaking analysis of detailed records which are not yet available even for the United States. In the meantime the current statistics published in the Weekly Health Index of the United States Census Bureau have already given a very fair picture of the epidemic in the larger cities of this country; and in connection with this the summaries herewith presented, abstracted from reports which are not so widely circulated in this country, may be of current interest. They are, therefore, presented at this time in abbreviated form and with no attempt at full analysis, merely to give a general idea of the course of the epidemic in foreign countries.

With reference to the general chronology of the epidemic, a summary has been prepared from the reports rendered to the Surgeon General of the United States Public Health Service by consular officers in foreign countries and State health authorities in the United States. These reports, which have already been published from time to time in the Public Health Reports, are here summarized in consecutive order. Although the reports are incomplete, and in many instances more or less indefinite as to dates and extent of epidemic prevalence, they still have a definite interest and significance in showing that as early as June and July, 1918, influenza was epidemic in Great Britain, parts of Continental Europe, India, China, Africa, and Brazil; that by September, when the epidemic first attracted attention in the United States, it already had a wide prevalence in many other countries; and that to date its extension has been virtually world wide.

Summary of the First Reports of the Pandemic of Influenza in Different Parts of the World.

JUNE.

Switzerland: June 1.—Reported as present in Zurich.
England: June 15.—Outbreak in Birmingham. Reported present in other localities.
India: June 22.—Epidemic in Bombay.
Brazil: June 16.—Epidemic in Santos.

JULY.

Netherlands: Reported as seriously prevalent.
Norway: July 13.—Reported as present in Christiania.
Sweden: July 13.—Few cases reported in Malmo.
July 27.—Reported as epidemic in Gothenburg.
Switzerland: Reported as epidemic throughout the country.
China: July 27.—Epidemic in Chungking, about one-half of the population being affected.
India: Reported as present in Madras and Calcutta, and spreading throughout India.
Algeria: Reported as prevalent during the summer.

AUGUST.

Greece: Aug. 18.—Reported as epidemic in Saloniki and in Kalamata.
Sweden: Aug. 10.—Outbreak in Stockholm.
Switzerland: Aug. 1.—Seriously prevalent in St. Gall.

Spain: Aug. 13.—Epidemic in city and district of Tarragona and in Huelva.
United States: Aug. 28.—Outbreak began in Boston.
West Indies: Aug. 3.—Reported as epidemic in Guadeloupe.

SEPTEMBER.

Denmark: Entire country affected during the month of September.
France: Epidemic reported in Brest, Bordeaux, Havre, Paris, Marseille, and Nantes.
Norway: Epidemic reported in Trondhjem.
Italy: Sept. 27.—Seriously prevalent in Palermo and in Florence.
Spain: Sept. 28.—Epidemic reported as general throughout Spain.
Portugal: Sept. 30.—Seriously prevalent in Lisbon.
Korea: Epidemic reported in Chemulpo, Fusan, and Seoul.
China: Sept. 28.—Widely prevalent in Hankow.
Tunis: Reported as epidemic in Tunis.
South African Union: Sept. 14.—First cases reported in Durban.
Sept. 18.—Epidemic in Rand area.
Sept. 23.—Reported in Cape Town and Kimberley.
Sierra Leone: Sept. 23.—Epidemic in Freetown.
Senegal: Sept. 23.—Epidemic in Dakar.
Morocco: Sept. 28.—Reported as present in epidemic form in Tangier.
Canada: Sept. 30.—Epidemic in Hamilton.
Sept. 28.—Epidemic in Quebec.
Sept. 21.—Epidemic in Victoriaville.
United States: Prevalent along the Atlantic seaboard and the Gulf of Mexico, and spreading rapidly westward, its presence being reported in 43 States and the District of Columbia.
Mexico: Epidemic reported in Santa Cruz.
Salvador: Sept. 11.—Reported as epidemic in Republic of Salvador.
Honduras: Sept. 16.—Epidemic in Amapala.
Brazil: Reported as epidemic in Bahia.
Bermuda: Sept. 25.—Epidemic reported in Bermuda.
Jamaica: Sept. 30.—Outbreak in Lucea and Montego Bay.

OCTOBER.

France: Seriously prevalent in Lyon.
Oct. 1.—Epidemic reported in St. Etienne.
Russia: Oct. 1.—Present in epidemic form in Archangel City.
Italy: Oct. 6.—Epidemic present among troops in Leghorn and in Messina.
Greece: Oct. 25.—Epidemic in Patras.
China: First week in October, epidemic reported in Chang-sha.
Liberia: Oct. 5.—Quarantine placed against vessels from any port in Africa.
Mexico: Oct. 5–21.—Present in epidemic form in Agujita, Chihuahua, Piedras Negras, Sabinas, Matamoros, and spreading rapidly throughout the country.
Canada: Oct. 5–18.—Epidemic reported in Nova Scotia, Province of Ontario, New Brunswick, and Newfoundland.
United States: Epidemic spread practically over the entire United States except into the more isolated rural and mountain areas. About October 15, the crest of the epidemic had been reached in cities along the Atlantic seaboard and in some interior cities, and by the end of the month the crest had been passed in nearly all the larger cities. In rural sections of the central and western sections the epidemic had not reached its height by November 1.
Honduras: Oct. 7.—Epidemic present in Tegucigalpa.
Oct. 30.—Epidemic reported in Belize and the surrounding country.
Guatemala: Oct. 11.—Epidemic reported in Guatemala city.
Costa Rica: Oct. 12.—Prevalent in Limon.
Uruguay: First week in October, widespread outbreak in Montevideo.
Brazil: Oct. 8.—Epidemic reported in Lorenzo Marquez.
Oct. 20.—Seriously prevalent in Para and epidemic in Sao Paulo.

Venezuela: Oct. 25.—Epidemic in La Guaira, Maracaibo, and Puerto Cabello, and spreading rapidly.
Colombia: Oct. 26.—Epidemic reported in Bogota, Barranquilla, Cartagena, and Peru.
Cuba: Oct. 9.—Seriously prevalent in Camaguey and Nuevitas.
Oct. 15.—Epidemic in Republic of Cuba and seriously prevalent in Nueva Gerona.
Oct. 29.—Quarantine placed on all ports.
Oct. 21.—Seriously prevalent in Regla.
Jamaica: Oct. 12.—Epidemic reported in Port Antonio.
Oct. 23.—Epidemic reported in Kingston.
Porto Rico: Oct. 23.—Widely prevalent. Quarantine placed on all ports.
Azores: Oct. 22.—Epidemic reported in Azores.
Australia: Oct. 17.—Quarantine placed on all ports.
Hawaii: Few cases reported in Honolulu.
Canary Islands: Oct. 18.—Reported in epidemic form.
Oct. 23.—Epidemic reported in Grand Canary, Las Palmas, and Teneriffe.
New Zealand: Oct. 19.—Severe epidemic reported in Auckland and generally diffused throughout dominion.
Madagascar: Oct. 19.—Outbreak in Madagascar.

NOVEMBER.

England: Severely prevalent in Nottingham.
Arabia: Outbreak in Aden.
India: Seriously prevalent throughout country.
China: Nov. 2.—Epidemic in mild form in Canton.
United States: Epidemic reached and passed its peak in the more isolated rural and mountain sections.
Honduras: Present in epidemic form in San Pedro.
Dutch Guiana: Outbreak in Paramaribo.
Jamaica: Nov. 2.—Spreading throughout island.
Samoa: Nov. 22.—Epidemic reported in Apia.

DECEMBER.

Paraguay: Prevalent in Paraguay and Asuncion.
West Indies: Present in light form in Trinidad.
Hawaii: Present in mild form in Island of Oahu.
Fiji Islands: Seriously prevalent.
Tonga Islands: Dec. 3.—Seriously prevalent.
Society Islands: Dec. 8.—Epidemic reported on Island Tahiti in every district.
Dec. 21.—Seriously prevalent on Islands Mururoa, Makatea, Raiatea, and Bora Bora.
Dominican Republic: Dec. 19.—Seriously prevalent in La Plata, Puerto Plata, and Santo Domingo.

JANUARY.

China: Epidemic reported in Amoy.
Dominican Republic: Jan. 2.—Prevalent throughout Province.
Brazil: Epidemic present in Campinas and Ribeirao Preto.
Australia: Jan. 25.—Epidemic present in Melbourne. This is the first definite report of the epidemic prevalence in Australia.

A much more definite picture of the chronology and severity of the epidemic in limited areas is given in Tables I and II, which show the annual death rates from all causes in certain cities of Great Britain and of continental Europe and India, by weeks, from June 2, 1918, to April 5, 1919, or to the last week for which statistics are available.

These tables are compiled from the Weekly Return of Births and Deaths of the Registrar General of England and Wales (1) (3),[1] excepting the statistics for Paris, which are derived chiefly from the Weekly Statistical Bulletin of the City of Paris (2).[1] From these reports statistics of mortality from all causes are available by weeks for the whole of the years 1917 and 1918 and such part of 1919 as is included in the tables. The records for the full years 1917 and 1918 have been

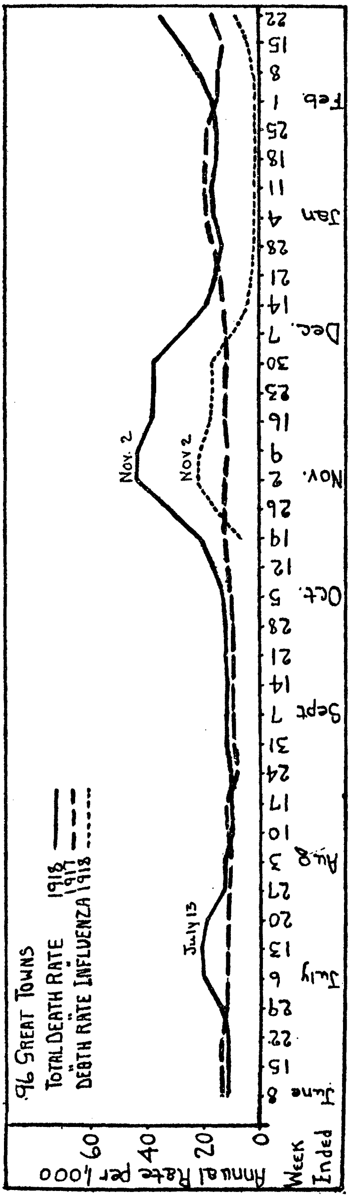

FIG. 1.—Effect of influenza upon mortality in 96 great towns of England and Wales: Annual death rate per 1,00 of population from all causes, by weeks, June 2, 1918, to February 22, 1919, and for the corresponding period in 1917–18, and annual death rate per 1,000 population from influenza, by weeks, October 13, 1918, to February 22, 1919.

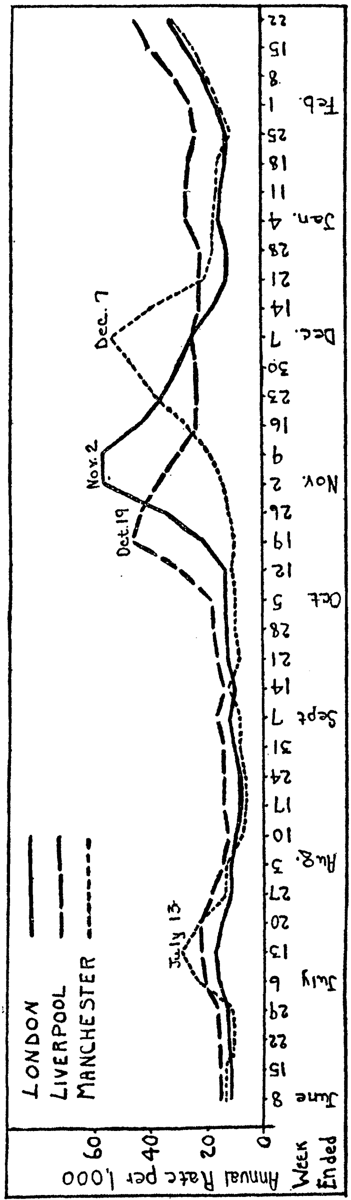

FIG. 2.—Effect of influenza epidemic upon mortality in London, Liverpool, and Manchester, England: Annual death rates per 1,000 of population from all causes, by weeks, June, 1918, to February 22, 1919.

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[1] Numbers refer to reports cited. See page 1376.

compiled for purposes of study, but in the tables here presented statistics are given only for the period since June 2, 1918, because it is only during this period that the gross mortality rates show the distinct and unmistakable influence of the influenza epidemic. Comparative statistics for corresponding weeks of 1917–18 are included in the tabulation only for the 96 Great Towns of England and Wales.

TABLE I.—*Annual death rates per 1,000 from all causes in 96 great towns of England and Wales, in London and in certain other large cities of Great Britain, by weeks, from June 2, 1918, to Apr. 5, 1919, with death rates for corresponding weeks of 1917–18 in 96 great towns.*

Week ended (1918–19)—	96 great towns. Population, 16,577,344.		Liverpool. Population, 716,140.	Glasgow. Population, 1,118,700.	Dublin. Population, 405,000.	London. Population, 4,026,901.	Sheffield. Population, 469,293.	Leeds. Population, 417,051.	Edinburgh. Population, 336,500.	Bristol. Population, 334,873.	Belfast. Population, 401,000.	Bradford. Population, 266,338.	Birmingham. Population, 870,211.	Manchester. Population, 660,143.	New Castle on Tyne. Population, 266,551.
	1917	1918													
June 8	12.7	11.5	15.0	12.5	17.3	11.2	11.2	14.8	10.8	10.0	14.1	11.4	9.0	11.5	11.5
15	12.8	11.4	15.1	11.2	17.0	11.0	12.1	11.5	9.9	8.9	17.1	14.5	10.4	11.1	10.6
22	12.4	11.7	15.7	12.2	16.9	12.0	12.0	13.4	11.3	11.2	25.3	13.1	11.3	11.5	12.5
29	11.7	13.2	15.2	11.7	15.7	13.2	16.9	17.8	12.2	8.4	**45.2**	15.3	11.0	13.4	13.7
July 6	11.2	19.0	20.2	12.8	23.4	17.3	**27.9**	21.5	12.8	12.6	44.4	17.2	19.8	23.1	25.4
13	11.7	**21.1**	21.3	12.2	**32.7**	**18.4**	24.3	**23.0**	**18.0**	12.9	28.3	**21.9**	**23.2**	**28.8**	**29.7**
20	11.2	18.0	21.0	**15.9**	27.2	15.2	21.2	17.8	16.6	**15.7**	20.2	21.9	15.1	23.9	22.3
27	11.2	13.1	18.4	14.9	20.0	11.8	12.3	10.6	11.1	13.2	17.4	18.4	10.0	13.9	13.3
Aug. 3	10.3	12.1	14.1	13.1	15.9	11.4	13.2	15.4	12.4	13.4	15.0	13.9	9.0	11.8	11.5
10	10.4	10.4	12.5	12.4	15.3	10.5	9.9	8.0	10.5	8.3	13.5	11.9	8.3	9.4	11.3
17	10.5	10.4	14.7	10.9	17.6	9.8	9.3	13.0	8.0	12.9	15.7	13.3	8.7	9.5	10.8
24	10.6	10.8	14.8	11.0	18.6	9.6	12.4	12.6	8.3	10.1	13.8	10.6	9.4	10.5	13.7
31	10.6	11.2	14.8	9.2	17.0	10.5	10.8	12.5	9.2	10.6	12.7	12.9	10.7	9.6	14.9
Sept. 7	11.1	11.9	17.1	11.7	17.3	11.3	12.7	13.8	9.9	10.3	11.3	11.7	11.9	11.1	12.3
14	10.6	11.3	13.3	11.0	19.1	10.5	13.9	12.9	10.8	11.7	14.5	12.9	9.7	9.6	12.5
21	11.1	11.7	16.0	12.8	16.9	11.8	12.0	12.6	11.7	10.6	14.5	13.7	9.2	10.4	9.2
28	10.8	11.4	17.2	18.6	20.0	12.2	12.2	13.8	11.9	9.3	10.2	9.0	8.8	10.2	13.7
Oct. 5	11.1	12.6	18.9	26.2	21.3	12.7	10.6	13.3	13.8	11.8	9.6	9.2	8.8	11.6	12.5
12	11.8	15.1	29.0	35.9	24.6	13.9	15.3	17.3	11.6	14.5	14.1	15.9	9.6	10.8	13.5
19	12.0	20.7	**46.2**	**38.4**	38.6	20.1	24.9	18.5	13.0	17.0	11.0	12.1	11.2	11.5	12.3
26	12.0	30.9	44.5	34.3	47.3	34.5	46.1	33.0	19.3	24.9	13.8	12.1	12.9	14.8	14.3
Nov. 2	12.6	43.0	37.4	26.7	**65.5**	**55.5**	**83.3**	49.5	35.4	49.7	17.5	20.6	19.4	19.7	19.4
9	11.8	**43.8**	29.2	19.2	60.0	55.5	75.9	**57.1**	**46.2**	**50.3**	34.0	29.0	24.8	27.0	31.3
16	12.2	38.7	23.2	18.9	45.6	44.0	51.9	52.5	36.6	42.4	54.7	43.7	29.4	36.3	33.1
23	12.3	36.3	23.7	23.5	31.9	36.8	38.2	41.1	32.5	32.5	**65.0**	**48.6**	35.8	45.3	36.2
30	11.9	36.5	24.2	21.8	26.0	32.8	37.9	33.4	32.2	30.1	61.4	47.2	**44.3**	**54.2**	**42.4**
Dec. 7	12.4	28.6	25.7	17.6	22.5	26.0	28.7	24.9	20.5	24.6	41.7	33.1	35.1	40.2	31.9
14	13.6	20.2	22.0	15.1	22.0	18.2	16.6	18.5	16.1	22.0	24.7	20.0	25.1	22.6	23.1
21	15.3	16.8	22.1	14.0	18.9	14.4	16.4	15.1	12.7	16.7	19.2	16.1	16.7	19.1	17.0
28	17.9	14.8	22.2	16.6	20.4	13.3	16.3	15.9	14.7	13.1	19.4	13.9	11.3	16.2	13.9
Jan. 4	18.1	16.1	27.0	15.1	23.4	16.6	15.7	18.9	17.8	16.8	17.3	14.1	13.4	15.2	16.4
11	19.6	16.0	27.3	18.6	21.2	15.8	14.8	19.4	19.1	15.7	20.4	12.9	14.3	16.5	15.8
18	18.7	15.5	26.0	14.9	22.1	14.8	14.1	18.6	21.1	13.7	15.7	18.0	13.3	16.9	16.2
25	17.1	15.0	24.6	16.4	23.0	14.1	13.7	19.6	21.4	12.8	18.9	14.3	12.1	14.9	16.8
Feb. 1	15.0	17.2	25.7	16.9	23.6	16.9	14.2	21.1	21.4	14.2	16.4	16.1	13.7	17.2	20.9
8	15.7	21.0	33.7	20.9	25.0	20.2	19.9	18.5	42.5	17.0	21.8	26.0	16.3	21.1	33.5
15	14.8	27.8	41.3	31.6	33.3	27.2	21.8	27.4	51.6	23.7	22.8	40.3	20.3	25.7	61.0
22	16.7	35.7	**46.7**	42.2	45.2	**34.2**	**29.9**	**43.3**	**52.1**	**36.1**	28.3	**60.5**	29.6	34.0	**66.1**
Mar. 1	18.4	**35.7**	43.4	**48.3**	60.0	**32.4**	29.8	41.9	41.2	31.1	30.9	53.3	**32.4**	40.6	44.2
8	17.4	31.9	38.2	42.9	**63.0**	26.6	28.9	40.3	27.9	35.8	30.3	52.9	28.7	**41.0**	30.7
15	18.5	26.4	28.8	32.7	47.8	21.4	28.6	33.4	23.6	32.2	**33.9**	32.3	30.5	30.1	20.7
22	16.5	20.9	22.3	25.5	37.1	18.0	22.8	23.3	18.3	22.9	30.9	19.6	26.5	24.4	18.0
29	17.7	19.3	20.0	22.8	31.5	17.6	22.6	17.9	15.3	19.9	26.9	24.7	23.4	24.2	18.2
Apr. 5	17.3	17.9	20.0	19.5	32.6	17.1	21.9	17.1	16.7	18.8	21.8	18.8	19.4	19.9	16.0

TABLE II.—*Annual death rates per 1,000 from all causes in continental European and Indian cities, by weeks, from June 2, 1918, to Mar. 29, 1919.*

Week ended (1918-19)—	Bombay. Population, 973,415.	Madras. Population, 518,660.	Trieste. Population, 152,740.	Budapest. Population, 1,031,256.	Vienna. Population, 2,312,274.	Gothenburg. Population, 196,943.	Berlin. Population, 1,705,215.	Hamburg. Population, 1,050,300.	Paris. Population, 2,847,229.	Stockholm. Population, 413,162.	Copenhagen. Population 539,000.	Amsterdam. Population, 644,073.	Christiania. Population, 259,627.	Calcutta. Population, 896,067.
June 8	37.2	39.1	26.6	24.3	17.9	7.6	16.6	18.8	11.1	10.1	12.7	11.3	12.9	24.9
15	33.2	36.2	31.0	......	20.8	12.7	16.4	23.6	11.0	13.3	11.1	11.5	11.3	26.9
22	37.2	40.0	22.8	......	18.2	9.7	15.9	21.6	11.5	10.8	9.9	10.8	10.5	25.7
29	54.6	40.7	26.6	......	19.0	9.5	19.4	20.9	11.2	10.9	9.9	10.9	10.9	26.6
July 6	**77.8**	41.7	......	26.1	19.3	13.0	20.9	21.1	11.5	13.3	10.8	9.7	11.7	25.6
13	63.0	48.3	20.1	24.0	22.7	9.7	16.4	23.3	**13.0**	8.1	9.2	10.6	16.2	31.3
20	40.6	62.9	......	......	......	11.1	18.3	22.5	11.5	9.7	10.9	11.7	**24.2**	**52.9**
27	34.2	**63.6**	......	19.2	......	13.2	20.9	23.5	10.4	10.6	12.8	7.5	21.2	50.4
Aug. 3	33.2	54.6	28.3	......	......	10.8	20.1	16.4	10.7	11.3	13.9	14.1	10.4	......
10	33.8	......	26.6	20.9	15.6	12.1	22.5	16.6	9.7	**18.4**	**14.7**	15.2	13.0	......
17	......	......	31.7	22.1	16.7	10.0	......	......	10.7	12.6	11.2	**17.0**	8.8	25.1
24	31.1	......	28.9	19.2	......	11.9	23.2	16.6	10.6	12.1	9.7	13.5	7.0	......
31	......	38.0	23.8	20.8	......	12.7	......	......	12.1	11.5	8.2	......	8.8	25.4
Sept. 7	36.4	41.0	30.3	18.8	15.7	......	21.3	18.4	11.9	......	6.5	9.8	13.4	23.5
14	51.0	42.3	35.7	23.7	17.4	......	21.9	20.4	12.9	10.6	8.2	10.3	12.2	28.0
21	100.0	45.9	45.2	23.6	19.6	......	21.7	18.6	15.7	......	......	10.3	12.6	29.9
28	169.1	65.2	45.3	28.8	22.1	15.6	20.5	20.2	15.9	......	......	11.4	15.6	32.8
Oct. 5	**257.2**	97.5	52.8	36.4	[illegible]	24.4	21.3	23.8	17.8	16.7	11.5	......	12.6	34.6
12	220.4	170.3	103.8	45.8	39.4	42.5	29.2	33.4	26.0	33.5	......	......	16.6	41.6
19	114.2	**202.1**	**136.5**	**58.4**	**58.6**	**67.9**	......	......	34.9	36.7	19.8	26.0	20.4	42.5
26	72.1	176.7	......	57.4	48.4	42.2	**41.7**	**47.7**	**46.1**	**40.5**	35.4	39.2	29.2	47.1
Nov. 2	54.0	113.3	......	39.4	29.3	28.5	37.5	37.3	43.2	33.2	**44.5**	**52.7**	**36.5**	46.1
9	43.3	119.5	......	46.0	22.2	24.5	22.0	26.5	28.4	26.4	37.1	42.0	29.5	53.2
16	40.9	81.0	......	36.5	24.0	23.8	21.7	28.8	21.0	23.2	23.8	31.6	26.0	59.7
23	40.1	79.9	......	43.4	27.6	16.9	21.1	22.9	17.9	22.1	16.9	21.4	19.8	58.5
30	33.1	56.6	......	46.4	27.3	16.1	22.7	22.7	19.4	20.1	15.0	20.9	17.1	**63.3**
Dec. 7	36.2	58.2	......	49.1	28.0	19.8	23.7	25.7	20.6	20.9	15.5	21.1	16.2	56.5
14	55.0	60.5	......	34.3	24.4	15.1	23.5	23.6	19.7	19.5	15.2	16.1	15.2	56.6
21	86.5	66.6	......	32.4	20.7	17.7	14.7	......	15.9	20.1	21.6	15.5	17.2	53.3
28	85.0	71.1	......	40.5	19.4	18.7	9.7	......	17.0	20.4	13.8	16.1	16.0	51.4
Jan. 4	101.0	78.4	......	......	20.1	14.5	22.3	21.2	17.8	23.0	17.5	14.9	18.6	47.2
11	81.0	97.9	......	......	19.0	15.6	14.6	21.9	18.8	20.1	24.9	14.5	15.2	48.6
18	76.5	88.8	......	......	17.5	12.7	20.9	22.4	18.5	15.6	23.2	14.6	12.0	56.1
25	180.6	88.7	39.2	......	......	18.4	19.6	21.8	18.0	14.6	20.3	14.3	11.8	65.6
Feb. 1	237.8	74.2	38.2	......	......	14.7	......	......	18.1	15.6	17.0	14.7	11.0	51.1
8	160.2	67.2	31.1	......	......	13.7	......	......	21.8	12.2	17.5	18.9	11.0	47.3
15	92.1	58.1	......	......	......	14.7	......	......	26.2	13.6	17.0	21.1	11.8	45.2
22	......	......	......	......	......	18.1	......	......	34.1	14.2	16.8	24.0	......	......
Mar. 1	......	......	30.3	......	......	......	......	......	30.3	14.5	17.4	16.7	12.2	......
8	......	......	25.6	......	......	......	......	......	25.9	18.6	18.7	18.4	21.4	......
15	......	......	......	......	......	......	......	......	20.4	......	20.2	15.5	......	......
22	......	......	......	......	......	......	......	......	17.9	......	16.9	......	......	......
29	......	......	......	......	......	......	......	......	......	......	......	......	......	......

Considering first the 96 Great Towns of England and Wales, comprising London and 95 other cities of over 50,000 population in 1911, it is evident from Table I and Figure 1 that since June 1, 1918, there have been three periods of sharply increased general mortality, namely:

First, from the week ending June 29, to the week ending July 27, inclusive, the highest mortality, corresponding to an annual rate of 21.1 per 1,000, being reached in the week ending July 13.

Second, from the week ending October 5, to that ending December 21, the highest mortality, an annual rate of 43.8 per 1,000, occurring in the week ending November 9.

Third, from the week ending February 8 to that ending March 22, the peak of mortality in this period, an annual rate of 35.7 per 1,000, being in the weeks ending February 22 and March 1.

These three waves of high mortality are, in turn, manifest in each of the thirteen large cities [1] for which statistics are given separately in the tabulation, though showing considerable variations in date, duration, and height. The variations in individual cities are illustrated in Figure 2, showing weekly mortality curves for Liverpool, London, and Manchester.

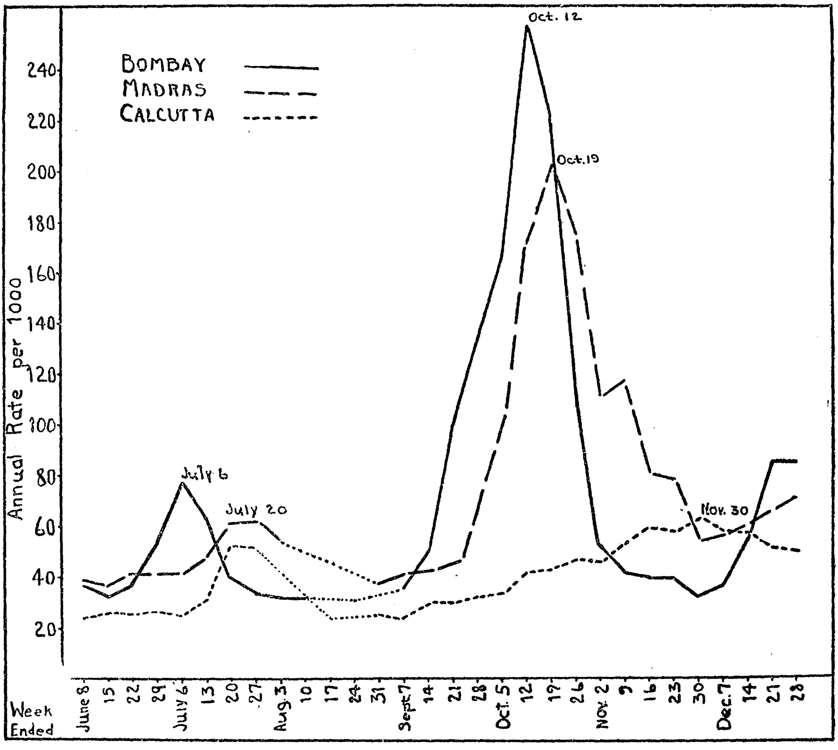

FIG. 3.—Effect of influenza epidemic upon mortality in Bombay, Madras, and Calcutta, India: Annua death rates per 1,000 of population from all causes, by weeks, June 2 to December 28, 1918.

Ordinarily, gross weekly death rates would not justify any conclusion as to the influence of a particular cause of death, especially where the population and environment have been materially altered by the abnormal conditions of war. In this instance, however, the increase in mortality rates is so very great, so general, and so nearly synchronous in the different cities, as to clearly indicate the operation of a single wide-spread cause, undoubtedly epidemic influenza. The certainty that epidemic influenza was the major factor in these increased death rates is established by the more detailed analyses presented later.

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[1] With the exception of Glasgow, Edinburgh, Dublin, and Belfast, these cities are all included in the group of 96 Great Towns.

The death rates of Continental European and Indian cities as presented in Table II are of less clear and less definite significance since, in some of these cities, the death rates throughout 1917 and the first half of 1918 had been abnormally high or irregular, and since, moreover, the statistics for the period embraced in the table are incomplete in places. Nevertheless, increased death rates which may safely be attributed to the influenza epidemic are noted during July

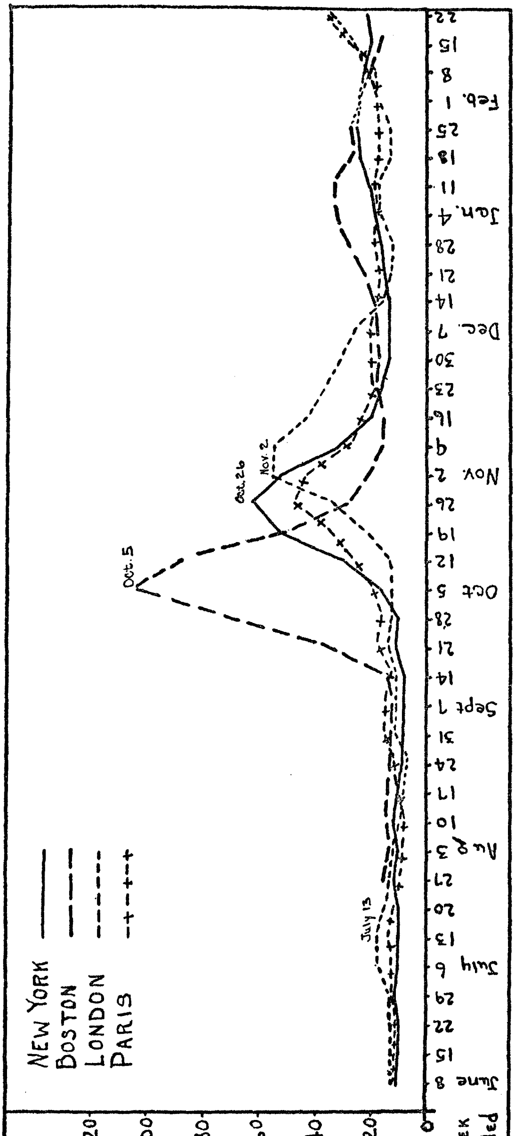

Fig. 4.—Effect of influenza epidemic upon mortality in New York City, Boston, London, and Paris: Annual death rates per 1,000 of population from all causes, by weeks, June 2, 1918, to February 22, 1919.

The graphs for New York City are plotted from data given in the Weekly Bulletin of the New York City Department of Health; those for Boston from the Weekly Health Index of the Bureau of the Census.

in Bombay, Madras and Calcutta, and in Christiania. A relatively slight increase which can be definitely attributed to the influenza epidemic only upon evidence which is presented later, is noted in Paris during the second week of July. In August, distinctly increased death rates, presumably indicative of the influenza epidemic, are noted in Stockholm, Copenhagen, and Amsterdam. The irregularity of death rates in the remaining cities of this group during June, July, and August does not warrant definite conclusions in the absence of more information as to the causes of death.

In all the cities of this group there is a very sharp increase in mortality rates, beginning at various dates from the first half of September to the latter part of October; reaching a maximum in the week ended October 5 in Bombay, the week ended November 30 in Calcutta, and between these dates in the other cities. Within this period the mortality in Bombay reached a maximum annual rate of 257.2, that in Madras 202, and in Trieste 136 per 1,000. The maximum mortality rates in the remainder of the cities are within the range of rates observed in the British cities.

The third wave of high mortality noted in British cities is shown, likewise, in the Indian cities, Bombay, Madras, and Calcutta, notably in Bombay. Among the Continental cities, Paris shows a distinct and considerable rise in February and March, which is less clearly evident in the other cities for which the statistics are fairly complete.

Figure 4, showing the annual mortality rates from all causes, by weeks, in Boston, New York City, London, and Paris, affords a convenient comparison of the course of the epidemic in these four cities, with reference to chronology and the extent of influence upon general mortality.

A more comprehensive comparison of relative chronology of the epidemic in American, British, Continental European, and Indian cities is presented in the following summary showing, for each of the cities listed, the week in which the highest mortality rate occurred between October 1 and November 30, which comprises the period of maximum epidemic mortality in all these cities.

Weeks in which the highest mortality occurred during the influenza epidemic of 1918–19 in cities of the United States, Great Britain, Continental Europe, and India.

Week ended (1918)—	United States.	Great Britain.	Continental Europe.	India.
Oct. 5	Boston			Bombay.
	Cambridge			
Oct. 12	Fall River			
	Lowell			
	Worcester			
Oct. 19	Providence	Glasgow	Gothenburg	Madras.
	Syracuse	Liverpool	Vienna	
	Philadelphia		Budapest	
	Baltimore		Trieste	
	Washington			
	Richmond			
	Indianapolis			
	Memphis			
	Nashville			
	Omaha			

Weeks in which the highest mortality occurred during the influenza epidemic of 1918–19 in cities of the United States, Great Britain, Continental Europe, and India—Con.

Week ended (1918)—	United States.	Great Britain.	Continental Europe.	India.
Oct. 26	Albany		Stockholm	
	Rochester		Hamburg	
	Buffalo		Berlin	
	New Haven		Paris	
	New York			
	Newark			
	Jersey City			
	Atlanta			
	Birmingham			
	Louisville			
	New Orleans			
	Chicago			
	Cincinnati			
	Columbus			
	Toledo			
	Dayton			
	Milwaukee			
	Minneapolis			
	Denver			
	Seattle			
Nov. 2	Cleveland	London	Christiania	
	St. Louis	Sheffield	Copenhagen	
	Kansas City	Dublin	Amsterdam	
	San Francisco			
	Los Angeles			
	Oakland			
	Portland			
Nov. 9	Pittsburgh	Edinburgh		
	Spokane	Leeds		
Nov. 16	St. Paul			
	Grand Rapids			
Nov. 23		Bradford		
		Belfast		
Nov. 30		Newcastle		Calcutta.
		Manchester		
		Birmingham		

The most striking fact in this summary is that this phase of the epidemic reached its maximum intensity simultaneously in Boston and in Bombay. The peak of mortality in the majority of American cities, outside of Massachusetts and of Continental European cities, fell during the two weeks ended October 26, while a majority of the British cities reached their maximum rates in the weeks ended November 2 to 30, inclusive.

Tables III and IV show, respectively, the number of deaths and the annual death rates from influenza, by weeks from October 13, 1918, to April 5, 1919, in certain British cities, including a majority of those comprised in Table I. These statistics, which are abstracted from the Weekly Reports of the Registrar General for England and Wales, are available only from the week ending October 19 (2) (3).[1] Reference to these tables shows that the excessively high mortality rates from all causes during October, November, and subsequent months correspond to excessive death rates from influenza, which, however, represent only a portion of the excess mortality attributable to the epidemic, part of the deaths having been returned, as in the United

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[1] Numbers refer to reports cited. See page 1376.

States, under the diagnosis of pneumonia or other acute respiratory infections.

TABLE NO. III.—*Number of deaths from influenza in Great Britain—96 great towns of England and Wales, London and certain other cities of over 250,000 inhabitants—by weeks, from Oct. 13, 1918, to Apr. 5, 1919.*

Cities.	Week ended—										
	October.		November.					December.			
	19	26	2	9	16	23	30	7	14	21	28
96 great towns	1,895	4,482	7,412	[1]7,560	5,916	5,106	5,119	3,574	1,885	1,014	581
London	371	1,256	[1]2,458	[1]2,433	1,665	1,178	942	660	322	186	95
Bristol	24	63	190	[1]186	144	105	73	57	37	32	18
Birmingham	8	51	98	187	246	280	[1]388	276	164	68	25
Liverpool	[1]215	230	170	118	86	55	66	68	51	43	44
Manchester	12	32	83	162	235	311	[1]374	254	111	55	89
Bradford	2	10	30	73	122	[1]121	120	69	29	13	8
Leeds	39	101	194	[1]247	208	163	110	57	31	13	14
Sheffield	69	233	[1]468	402	241	164	166	97	39	22	18
Newcastle on Tyne	12	7	32	81	73	101	[1]99	68	40	15	15
Dublin	103	162	[1]250	204	141	67	49	42	24	14	9

Cities.	Week ended—													
	January.				February.				March.					April
	4	11	18	25	1	8	15	22	1	8	15	22	29	5.
96 great towns	441	380	274	222	272	604	1,363	3,046	3,889	3,218	2,320	1,361	888	569
London	65	68	43	33	58	100	273	653	808	597	435	230	125	41
Bristol	19	14	5	10	4	3	13	39	70	76	63	37	21	10
Birmingham	19	19	8	4	8	10	29	84	159	134	157	107	94	56
Liverpool	66	56	33	40	29	55	19	188	196	149	93	59	19	30
Manchester	14	16	18	6	9	28	44	130	196	210	117	74	54	34
Bradford	6	2	6	4	5	37	50	142	129	106	47	14	23	7
Leeds	14	14	2	15	9	14	29	82	130	96	71	45	23	11
Sheffield	9	5	12	6	8	13	18	53	64	83	57	36	27	27
Newcastle on Tyne	7	6	3	3	11	42	119	163	94	58	33	22	15	4
Dublin	10	6	10	6	3	4	21	88	153	148	104	77	34	41

[1] Indicates week of highest mortality rate from all causes (see Table I).

TABLE NO. IV.—*Annual death rates per 1,000 from influenza in Great Britain—96 great towns of England and Wales, London and certain other cities of over 250,000 inhabitants—by weeks, from Oct. 13, 1918, to Apr. 5, 1919.*

Cities.	Week ended—										
	October.		November.					December.			
	19	26	2	9	16	23	30	7	14	21	28
96 great towns	6.0	14.1	23.3	[1]**23.8**	18.6	16.1	16.1	11.2	5.9	3.2	1.8
London	4.8	16.3	[1]**31.8**	[1]31.5	21.5	15.2	12.2	8.5	4.2	2.4	1.3
Bristol	3.7	9.8	**29.6**	[1]28.9	22.4	16.4	11.4	8.9	5.8	5.0	2.8
Birmingham	.5	3.1	5.9	11.2	14.7	16.8	[1]**23.2**	16.5	9.8	4.1	1.5
Liverpool	[1]15.6	**16.7**	12.4	8.6	6.2	4.0	4.8	4.9	3.7	3.1	3.2
Manchester	.9	2.5	6.6	12.8	18.6	24.6	[1]**29.5**	20.1	8.8	4.3	3.1
Bradford	.4	2.0	5.9	14.3	**23.9**	[1]23.7	23.5	13.5	5.7	2.5	1.6
Leeds	4.9	12.6	24.2	[1]**30.9**	26.0	20.4	13.8	7.1	3.9	1.6	1.8
Sheffield	7.7	25.9	[1]**51.9**	44.6	26.8	18.2	18.5	10.8	4.3	2.4	2.0
Newcastle on Tyne	2.3	1.4	6.3	15.8	14.3	**19.7**	[1]19.4	13.3	7.8	2.9	2.9
Dublin	13.3	20.8	[1]**32.2**	26.2	18.1	8.6	6.3	5.4	3.1	1.8	1.2

[1] Indicates week of highest mortality rate from all causes (see Table I).

TABLE NO. IV.—*Annual death rates per 1,000 from influenza in Great Britain, etc.—Con.*

Cities.	Week ended—													
	January.				February.				March.					April 5.
	4	11	18	25	1	8	15	22	1	8	15	22	29	
96 great towns	1.4	1.2	0.9	0.7	0.9	1.9	4.3	9.6	*12.2*	10.1	7.3	4.3	2.8	1.8
London	.8	.9	.6	.4	.8	1.3	3.5	8.4	*10.4*	7.7	6.5	3.0	1.6	1.2
Bristol	3.0	2.2	.8	1.6	.6	.5	2.0	6.1	10.9	*11.8*	9.8	5.8	3.3	1.6
Birmingham	1.1	1.1	.5	.2	.5	.6	1.7	5.0	9.5	*18.0*	9.4	6.4	5.6	3.4
Liverpool	4.8	4.1	2.4	2.9	2.1	4.0	1.4	13.7	*14.8*	10.8	6.8	4.3	1.4	2.2
Manchester	1.1	1.3	1.4	.5	.7	2.2	3.5	10.3	15.5	*16.6*	9.2	5.8	4.3	2.7
Bradford	1.2	.4	1.2	.8	1.0	7.2	9.8	*27.8*	25.2	20.7	9.2	2.7	4.5	1.4
Leeds	1.8	1.8	.3	1.9	1.1	1.8	3.6	10.3	*16.3*	12.0	8.8	5.7	2.9	1.4
Sheffield	1.0	.6	1.3	.7	.9	1.4	2.0	5.9	7.1	*9.2*	6.3	4.0	3.0	3.0
Newcastle on Tyne	1.4	1.2	.6	.6	2.2	8.2	23.3	*31.9*	24.3	15.0	8.5	5.7	3.9	1.0
Dublin	1.3	.8	1.3	.8	.4	.5	2.7	11.3	*19.7*	19.0	3.4	9.9	4.4	5.3

Table V shows the number of deaths from influenza in Continental European and Indian cities by weeks so far as this information is available, i. e., from the week ended September 7, 1918, or, in some instances, from a later period, to week ended March 15, 1919. This table, compared with Table II, shows also a very definite parallelism between gross death rates and deaths from influenza.

In order to show more specifically the influence of epidemic influenza upon the excess death rates from all causes, Table VI has been compiled, showing for London (1),[1] Paris (2),[1] and Dublin (3),[1] the only foreign cities for which detailed records are as yet available, the number of deaths each week from influenza, all forms of pneumonia, acute bronchitis and "other diseases of the respiratory system" for the period June 2, 1918, to February 22, 1919, with parallel records for corresponding weeks in the previous year. One column in this table shows the excess deaths from these causes in the 1918–19 epidemic period as compared with the preceding year. From this table it is evident that the slightly increased mortality in Paris during July was attributable to an increase in deaths from these causes. This is even more clearly evident in respect to London and Dublin during July, and in respect to all three cities during the subsequent epidemic periods.

TABLE V.—*Number of deaths from influenza in Continental European and Indian cities, by weeks, from Sept. 7, 1918, to Mar. 15, 1919.*

Cities.	September.				October.				November.				
	7	14	21	28	5	12	19	26	2	9	16	23	30
Bombay	......	11	108	490	[2] 934	**984**	505	252	137	72	60	43	23
Madras	4	2	......	25	150	554	[2] **890**	709	399	331	108	89	44
Trieste	3	2	8	17	17	53	[2] **61**	......	......	......	......	......	......
Budapest	2	4	16	54	143	266	[2] 481	**536**	358	339	199	297	282
Vienna	......	......	9	28	98	421	[2] **908**	841	300	160	151	227	249
Gothenburg	......	......	......	26	47	95	[2] **163**	104	67	......	49	33	24
Paris	12	15	53	94	192	472	880	[1] **1,263**	1,119	629	309	176	184
Stockholm	......	......	......	......	53	128	178	[2] **221**	160	118	......	71	55
Copenhagen	......	......	......	......	......	......	11	**26**	[2] 15	**25**	......	6	6
Amsterdam	......	......	......	......	......	......	101	225	[2] **290**	193	110	52	48
Christiania	......	......	......	......	......	......	......	72	(2)	90	......	42	21
Calcutta	2	......	2	15	45	121	158	252	326	389	**438**	408	[2] 378

[1] Numbers refer to reports cited. See page 1376.

[2] Indicates week of highest recorded mortality rate from all causes. (See Table II.)

TABLE V.—*Number of deaths from influenza in Continental European and Indian cities by weeks, from Sept. 7, 1918, to Mar. 15, 1919*—Continued.

Cities.	December.				January.				February.				March.		
	7	14	21	28	4	11	18	25	1	8	15	22	1	8	15
Bombay....	21	14	18	21	13	25	12	7	6	4	6	......	......	......	......
Madras.....	32	23	13	15	6	......	......	......	......	......	......	......	......	......	......
Trieste.....	......	......	......	......	......	......	......	2	......	2	......	......	4	3	......
Budapest...	386	185	224	200	......	......	......	......	......	......	......	......	......	......	......
Vienna.....	214	151	93	66	42	35	44	......	......	......	......	......	......	......	......
Gothenburg	23	17	19	27	16	......	8	19	10	4	3	14	......	......	......
Paris.......	236	171	168	142	142	151	89	75	77	91	165	358	424	296	161
Stockholm..	49	33	53	42	56	44	24	20	17	19	11	22	22	38	......
Copenhagen	......	4	8	4	4	10	5	12	6	......	3	2	6	4	6
Amsterdam	31	30	23	14	......	6	8	3	5	5	1	8	5	5	2
Christiania.	......	23	22	13	20	9	11	5	3	......	6	......	2	26	46
Calcutta....	332	277	216	229	208	222	201	160	166	155	92	......	......	......	......

TABLE VI.—*Number of deaths from influenza and other acute respiratory diseases in each week from June 2, 1918, to Feb. 22, 1919, and in corresponding weeks of 1917–18 in London, Dublin, and Paris.*

1918–19 Week ended—	London.			Dublin.			Paris.		
	1917–18	1918–19	Increase or decrease 1918–19.	1917–18	1918–19	Increase or decrease 1918–19.	1917–18	1918–19	Increase or decrease 1918–19.
June 8........	121	116	− 5	19	21	+ 2	71	51	− 20
15........	122	114	− 8	21	21	+ 0	78	53	− 25
22........	87	131	+ 44	14	30	+ 16	77	60	− 17
29........	78	202	+ 124	13	28	+ 15	46	85	+ 39
July 6........	98	426	+ 328	20	72	+ 52	40	83	+ 43
13........	119	571	+ 452	24	153	+129	53	135	+ 82
20........	109	379	+ 270	18	100	+ 82	65	87	+ 22
27........	91	227	+ 136	21	66	+ 45	57	58	+ 1
Aug. 3........	83	125	+ 42	18	24	+ 6	53	65	+ 12
10........	79	96	+ 17	15	23	+ 8	47	51	+ 4
17........	64	93	+ 29	10	24	+ 14	36	75	+ 39
24........	81	71	− 10	16	19	+ 3	40	75	+ 35
31........	70	86	+ 16	14	15	+ 1	38	93	+ 55
Sept. 7........	91	86	− 5	18	25	+ 7	39	81	+ 42
14........	66	87	+ 21	15	18	+ 3	40	114	+ 74
21........	77	90	+ 13	14	19	+ 5	44	167	+ 123
28........	94	122	+ 28	15	38	+ 23	44	252	+ 208
Oct. 5........	103	158	+ 55	15	50	+ 35	51	372	+ 321
12........	99	278	+ 179	16	71	+ 55	42	718	+ 676
19........	174	675	+ 501	24	196	+172	62	1,174	+1,112
26........	182	1,689	+1,507	13	270	+257	68	1,741	+1,673
Nov. 2........	189	3,178	+2,989	25	418	+393	109	1,499	+1,390
9........	178	3,228	+3,050	24	360	+336	100	874	+ 774
16........	194	2,378	+2,184	27	241	+214	101	476	+ 375
23........	212	1,789	+1,577	31	147	+116	95	326	+ 231
30........	187	1,451	+1,264	20	107	+ 87	86	371	+ 285
Dec. 7........	220	1,070	+ 850	38	83	+ 45	72	443	+ 371
14........	219	612	+ 393	44	70	+ 26	88	342	+ 254
21........	343	342	− 1	27	48	+ 21	101	305	+ 204
28........	564	311	− 253	38	51	+ 13	177	286	+ 109
Jan. 4........	566	321	− 245	39	64	+ 25	204	290	+ 86
11........	554	326	− 228	46	55	+ 9	261	322	+ 61
18........	491	289	− 202	41	48	+ 7	225	256	+ 31
25........	347	280	− 67	38	45	+ 7	186	250	+ 64
Feb. 1........	276	369	+ 93	41	52	+ 11	163	257	+ 94
8........	287	529	+ 242	25	69	+ 44	120	344	+ 224
15........	252	907	+ 655	27	124	+ 97	112	529	+ 417
22........	290	1,464	+1,174	31	209	+178	113	852	+ 739

A further analysis of the influence of deaths from influenza, pneumonia, bronchitis, and other respiratory diseases (excepting pulmonary tuberculosis) in contributing to the excess death rates in London, Paris, and Dublin, is shown in Tables VII and VIII, in which also are included statistics for New York City compiled from the Weekly Bulletin of the New York City Department of Health (4)[1]. From Table VIII it is seen that excess deaths from influenza are 74.3 per cent, and the excess deaths from pneumonia (all forms) are 50.6 per cent of the excess deaths from all causes in New York, the combined total of excess deaths from influenza and pneumonia thus being approximately 25 per cent greater than the excess deaths from all causes.[2]

The London statistics differ from those of New York in showing a relatively larger percentage of excess deaths returned under the diagnosis of influenza, a much smaller percentage, 7.3 per cent, returned as due to pneumonia, and a considerable proportion, 13.7 per cent, returned as due to bronchitis, the sum of the excess from these causes being approximately equal to the total excess.

The Paris statistics are generally similar in respect to the proportion of deaths from influenza and pneumonia, but have a negligible proportion, 0.2 per cent, attributed to bronchitis and a notably large proportion, 20.1 per cent, attributable to "other diseases of the respiratory system." This difference is readily accounted for by the fact that in the Paris statistics deaths from broncho-pneumonia are included in the group of "other diseases of the respiratory system," whereas in the statistics of New York and British cities these deaths are included under the diagnosis of "pneumonia, all forms."

TABLE VII.—*Number of deaths from all causes and from influenza, pneumonia (all forms), bronchitis, and other respiratory diseases,[1] for the period June 2, 1918, to Feb. 22, 1919, and for the corresponding period in 1917–18, and number of excess deaths from these causes in 1918 over 1917, in New York, London, Paris, and Dublin.*

Cities.	All causes.			Influenza.			Pneumonia (all forms).		
	1917	1918	Excess.	1917	1918	Excess.	1917	1918	Excess.
New York	54,871	74,742	20,071	236	15,151	14,915	6,923	17,084	10,161
London	41,531	57,732	16,201	285	12,868	12,583	3,285	4,467	1,182
Paris	28,334	39,102	10,768	37	7,362	7,325	761	1,451	690
Dublin	5,117	8,136	3,039	19	1,622	1,603	346	1,045	699

Cities.	Bronchitis.			Other respiratory diseases.[3]		
	1917	1918	Excess.	1917	1918	Excess.
New York						
London	3,746	5,964	2,218	234	351	117
Paris	129	152	23	2,477	4,646	2,169
Dublin	520	816	296	50	31	[4]12

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[1] Numbers refer to reports cited. See page 1376.

[2] In letting the number of excess deaths be represented by 100 per cent, an algebraic rather than an arithmetical sum is used, and, whereas the excess deaths from influenza and pneumonia (all forms) are represented by plus quantities the excess deaths from certain other diseases are minus quantities. This means that the indicated death rates in these latter diseases are below rather than in actual excess of the rates for the comparative period.

[3] Except pulmonary tuberculosis.

[4] Decrease.

TABLE VIII.—*Ratio of the excess deaths from influenza, pneumonia (all forms), bronchitis, and other respiratory diseases during the period June 2, 1918, to Feb. 22, 1919, to excess deaths from all causes in this period as compared with the corresponding period in 1917–18, in New York, London, Paris, and Dublin.*

Cities.	Ratio of excess deaths from each cause to excess, all causes.					
	All causes.	Influenza.	Pneumonia (all forms).	Bronchitis.	Other respiratory diseases.	Total of diseases specified.
New York	100.0	74.3	50.6	....	....	[1] 124.9
London	100.0	77.7	7.3	13.7	0.7	99.4
Paris	100.0	68.0	6.4	.2	20.1	94.7
Dublin	100.0	52.7	23.0	9.7	[2] 0.4	85.0

[1] Including influenza and pneumonia (all forms).

[2] Decrease.

The Dublin statistics show a relatively smaller proportion of deaths attributable to influenza and a larger proportion to pneumonia than do the London and Paris statistics.

Whether the differences in relative prominence of these various assigned causes of deaths are due to actual clinical differences in the disease as manifested in the several cities, or only to differences in nomenclature and classification, is uncertain.

While this paper was in process of publication the report of the Influenza Commission of the Union of South Africa was received, from which Tables IX and X have been abstracted.

These figures are of special interest because of the enormous case incidence—42.8 per cent; also because of the notably higher incidence and death rates in the native as compared with the European population.

With reference to this difference the Commission makes the following comment:

"As to the reasons for these variations, the Commission can express no definite opinion. The well-established susceptibility of the native and colored population of South Africa to diseases of the respiratory tract, inhygienic housing and lack of even the most rudimentary knowledge of caring for the sick, and, in many cases, prejudice against medical help and against admission to hospitals, undoubtedly played very important rôles in causing heavy mortality."

TABLE IX.—*Number of cases and number of deaths from influenza in Union of South Africa during the period Aug. 1 to Nov. 30, 1918.*[1]

Province.	Population.			Cases.			Deaths.		
	European (1918).[2]	Other than European (1911).	Total.	European.	Other than European.	Total.	European.	Other than European.	Total.
Cape	617,131	1,982,588	2,599,719	192,007	1,009,223	1,201,230	5,855	81,253	87,108
Transvaal	498,413	1,265,650	1,764,063	140,639	491,448	632,087	3,267	25,397	28,664
Orange Free State	181,613	352,985	534,598	79,532	150,492	230,024	2,242	7,495	9,737
Natal	120,903	1,095,929	1,216,832	42,475	510,989	553,464	362	13,600	13,962
Union	1,418,060	4,697,152	6,115,212	454,653	2,162,152	2,616,805	11,726	127,745	139,471

[1] Report of the Influenza Epidemic Commission, Union of South Africa, 1919.

[2] Preliminary figures.

TABLE X.—*Case incidence, case fatality, and death rates from influenza in Union of South Africa during the period Aug. 1 to Nov. 30, 1918.*[1]

Province.	Case incidence, per cent.			Case fatality, per cent.			Death rate per 1,000.		
	European.	Other than European.	Total.	European.	Other than European.	Total.	European.	Other than European.	Total.
Cape	31.11	50.90	46.20	3.04	8.05	7.25	9.48	40.98	33.50
Transvaal	28.31	38.82	35.83	2.32	5.16	4.53	6.55	20.06	16.24
Orange Free State	43.79	42.63	43.02	2.81	4.98	4.23	12.34	21.23	18.21
Natal	35.13	46.62	45.48	.85	2.66	2.52	2.99	12.40	11.47
Union	32.06	46.03	42.79	2.57	5.90	5.32	8.26	27.19	22.80

[1] Report of the Influenza Epidemic Commission, Union of South Africa, 1919

References.

(1) Weekly Return of Births and Deaths Registered: London and Ninety-five Other Great Towns. By authority of the Registrar General. H. M. Stationery Office, London. Vols. 51 (1917), 52 (1918), and 53 (1919).

(2) Bulletin Hebdomadaire de Statistique Municipale, Ville de Paris. Masson & Cie., Paris, 1917, 1918, 1919.

(3) Weekly Return of Births and Deaths Registered in the Dublin Registration Area and in Eighteen of the Principal Urban Districts of Ireland. By authority of the Registrar General. Alex. Thom & Co. (Ltd.), Dublin. Vols. 54 (1917), 55 (1918), and 56 (1919).

(4) Weekly Bulletin of the Department of Health, City of New York. Vols. VI, VII, and VIII.

(5) Report of the Influenza Epidemic Commission, Union of South Africa. Cape Times (Ltd.), Cape Town, 1919.

CLOSING OF SCHOOLS AND THEATERS DURING INFLUENZA EPIDEMIC.

ARIZONA SUPREME COURT DECIDES THAT LOCAL BOARDS OF HEALTH CAN ORDER SUCH CLOSING.

In a recent Arizona case [1] the supreme court of that State decided that a local board of health can order the schools to be closed during an epidemic to prevent the spread of the disease.

The board of school trustees of the city of Globe sought to enjoin the enforcement of regulations of the city board of health closing the schools during the epidemic of influenza. It was contended that it was beyond the power of the health board to take such action.

The regulations in question declared certain things to be nuisances, among these being holding sessions of schools during the influenza epidemic, and prohibited the same. The court treats very fully of

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[1] Globe School Dist. No. 1, of Globe, Gila County, *v.* Board of Health of City of Globe, 179 Pac. 55.